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Evaluation of wetland - Waterfowl landowner complex on a sample area in Saskatchewan. [Saskatoon, 1961].

AN EVALUATION OF WETLAND-WATERFOWL LANDOWNER COMPLEX ON A SAMPLE AREA IN SASKATCHEWAN

by

H.J.D. Stephen & R.T. Sterling

While losses of wetlands have been occurring in Saskatchewan (Moulding, 1960) promotion of waterfowl habitat improvements has been thwarted by actual or implied displeasure of landowners of the risk of resultant increased crop damage by ducks (Mair, 1953,p. 118; Munro, 1955, p. 125; Paynter 1955, p. 157). Data are needed to indicate the magnitude of those habitat losses on the prairies as a whole and to define their potential impact on the continental waterfowl supply. Data are also needed to indicate the degree to which crop damage by ducks is a factor limiting waterfowl habitat maintenance and improvement.

The investigation reported here was undertaken to assess a method of correlating information on land use, past and present waterfowl habitat and farmer's attitude to waterfowl resource utilization. Township 47 in Range 18 west of the second meridian was selected as a study area. That township is in the Fort a la Corne drainage project of the Conservation and Development Branch of the Saskatchewan Department of Agriculture, and is one in which drainage has occurred with government assistance. Similar drainage projects are planned for adjacent townships.

The opinions of 31 farmers living within the study area were obtained by personal interview. Those farmers control 8.75 square miles of the 36 square mile township (26.4%). The magnitude of habitat loss from all causes was assessed by comparing maps compiled from vertical aerial photographs taken in June, 1955 with oblique aerial photographs taken in June 1961. The water levels in 1955 are considered to be maximum. Waterfowl populations were assessed by a "roadside count" of one-sixth mile wide transects which sampled 10.6 square miles

of the 36 square miles in the township (29.4%). Existing water areas on the transects were checked to gain some control for interpretation of 1961 aerial photographs. Field work was conducted from June 6 to June 9 in 1961 by R.T. Sterling of Ducks Unlimited and W.J.D. Stephen of the Canadian Wildlife Service.

RESULTS

Habitat

An indication of the amount of surface water in June, 1955 and June, 1961 is given in Table 1.

Table 1: Amount and Distribution of surface water in Township 47, Range 18, West of the second Meridian in June, 1955 and June, 1961.

	Number of Ponds	Ponds per Sq. Mile	Total Acres Surface Water	Acres Surface Water per sq. mile	Mean Acres of Ponds	Size Range of Ponds
1955	921	25.6	4183.7 acres	116.2	4.5 acres	0.1-338.2 acres
1961	458	12.7	700.5 acres	19.5	1.5 acres	0.1- 79.6 acres
% change	-50%	-50%	-83%	-83%	-66%	

Some of the surface water loss has been the result of evaporation. Much has also been lost as a result of drainage. Table 2 and accompanying maps indicate the direct changes of ponds which have been in the path of the main Conservation and Development Branch ditch. "Satellite" drainage by individual farmers has not been included.

Table 2: Change in number and size of ponds affected by main Conservation and Development Branch ditch in Twp. 47, Rge. 18, West 2nd Meridian.

	Number of Ponds	Total Acres of Ponds	Mean Acres of Ponds	Size Range of Ponds
1955	15	599.2 ac.	39.9 ac.	1.0-238.2 ac.
1961	35*	85.7 ac.	2.5 ac.	0.1- 55.2 ac.

* Larger ponds were reduced to unconnected interior basins.

Waterfowl

The value of wetlands in Township 47, Range 18, to waterfowl in 1955 is unknown. The present value to waterfowl is indicated by census results presented in Table 3.

Table 3: Breeding pair equivalents* censused in Township 47, Range 18, West of 2nd Meridian on June 7 and 8, 1961.

Species	No. observed	Percent of Total	Estimated No./Sq.Mi. of transect
Mallard	181	26.8	17.1
B.W. Teal	143	21.2	13.5
Shoveller	88	13.0	8.3
Baldpate	60	8.8	5.7
Scaup	59	8.7	5.6
Pintail	53	7.8	5.0
Gadwall	37	5.5	3.5
G.W. Teal	25	3.7	2.4
Redhead	16	2.4	1.5
Canvasback	6	.9	.6
Ruddy	6	.9	.6
Bufflehead	1	.1	.1
	675	-	64

* Lone ducks, lone females, groups under five in number and hens with broods were considered equivalent to breeding pairs.

It is estimated that there will be 75% of the 1961 surface water in this township remaining in 1962, assuming only evaporation losses and no gain from run-off.

Landowners

Less than half (43%) of the farmers used the surface water on their land for any purpose. Of those who did, over half (53%) used the water for hunting and trapping. The rest used surface water for agricultural purposes such as irrigation, crop spraying and stock watering but did not consider it essential for these purposes. Approximately 40% of the farmers interviewed had drained at least some of the surface water from their land either themselves or with government assistance. Eighty percent of the farmers interviewed used land reclaimed by drainage or evaporation for cultivation of grain. Ninety percent of the farmers had experienced crop damage by waterfowl but most of that damage was classified by them as not too serious. Approximately three quarters of those interviewed had no opinion on what should be done about duck damage. When asked about their reaction if land were acquired for game management purposes in the district, 20% had no opinion, 20% were unconditionally agreeable, 45% conditionally agreeable and 15% were unconditionally opposed. The conditions of agreement were that farmers losses to duck damage not be increased as a result of such acquisition.

Assessment of Technique Efficiency

Planning this investigation required approximately two man-days. Actual field work exclusive of travelling from headquarters to study area and return required six man-days to interview 21 farmers, and census 10.6 square miles of transects. Analysis of data obtained and preparation of a final report required approximately 20 man-days.

Conclusions

1. It is apparent that under present circumstances wetlands in Township 47, Range 18, W. 2 were of most value to farmers for their potential grain production.
2. It is apparent that acquisition of wetlands in Township 47, Range 18 for

waterfowl production would be opposed by most farmers unless managed in such a way that crop damage losses would not be increased.

3. It is apparent that there has been considerable loss of surface water in Township 47, Range 18, W. 2 since 1955. Some of that loss has resulted from evaporation but most has resulted from drainage.

4. Evaluation of the wetland-waterfowl-landowner complex as conducted in this investigation is estimated to require about one man-day per square mile for planning field work, analysis and writing a report.

Recommendations

1. If rights to the large water areas in this township had been acquired wetland losses through drainage could have been controlled. If it is assumed that a 20 year easement on water rights could have been obtained in 1955 at $7.00/acre for existing water only, the cost of such easement would have been $29,000 for the township. If it is assumed that control of "key" water areas could have been obtained at the same rate per acre, and that no drainage would have taken place except through channels which have now been constructed then the cost of controlling wetland losses from drainage would have been $4200 for the entire township.

Those "key" areas might have been intensively developed as wildlife production and public shooting areas with the savings. Therefore, it is recommended that in certain wetlands--agriculture complexes it is more economical and equally effective to acquire "key" water control basins rather than a "blanket" easement, for all surface water in the watershed.

2. Regardless how much easement of water rights costs there will still be a problem of waterfowl depredation control. This might be accomplished by provision of effective scaring equipment such as acetylene exploders which

will discourage ducks from landing in unharvested crops, and provision of undisturbed alternate field-feeding areas, either in the form of stubble fields, lure crops or feeding stations.

5. It will be necessary to determine how far from a water area on which an easement is obtained that any agency will accept responsibility for damage caused by ducks whose field-feeding flights are purported to be from the easement area. A need is indicated for a quantitative study of field-feeding by migratory birds.

W.J.D. Stephan

Saskatoon, Saskatchewan
September 15th, 1961.

W.J.D. Stephan,
Canadian Wildlife Service

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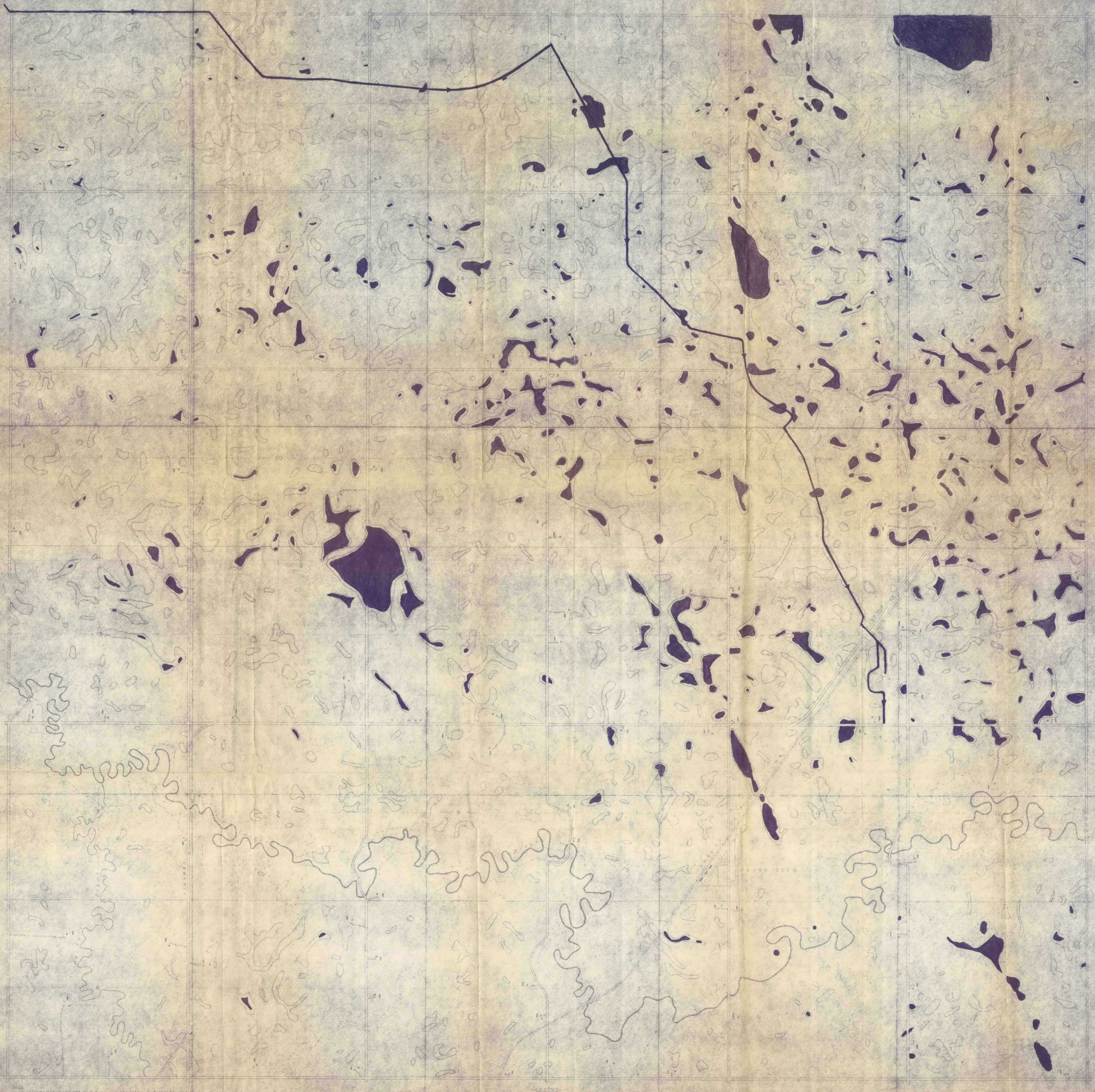

Note
Information compiled and drawn in the office of the Saskatchewan Department of Agriculture (Conservation and Development Branch), using photographs taken by Saskatchewan Gov't Airways June 9, 1955 for the Department of Agriculture (Conservation and Development Branch).

LEGEND

Water 1955
Muskeg
Casual run
Bridge
Hedge
Highway
Road
No road
Building, Barn
Trail
School
Railway

Water 1961
Ditch

SASKATCHEWAN
DEPT. OF AGRICULTURE
CONSERVATION AND DEVELOPMENT BRANCH

PLANIMETRIC MAP OF
Twp. 47 - Rge. 18 - W.2

SCALE 1 INCH 1000 FEET
PLAN No.

CWS

61-19 Stephen, W. J. Douglas
An evaluation of
wetland-waterfowl-
landowner complex on a,

TITLE

DATE LOANED	BORROWER'S NAME